No. 200600117

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Rutgers, The State University of New Jersey

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

FESCUE, RED

'Fortitude'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this thirtieth day of January, the year two thousand and eight.

Attest:

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Secretary of

REPRODUCE LOCALLY. *Include form number and date on all reproductions*

Form Approved - OMB No. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF OWNER
Rutgers, The State University of New Jersey ~~c/o Dr. William Meyer~~ (BT: 8/4/2006)

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME
TL53

3. VARIETY NAME
Fortitude

4. ADDRESS *(Street and No., or R.F.D. No., City, State, and ZIP Code, and Country)*
Foran Hall
Plant Biology & Pathology Dept.
59 Dudley Road
New Brunswick, NJ
08901

5. TELEPHONE *(include area code)*
(732) 932-9711

6. FAX *(include area code)*
(732) 932-9441

FOR OFFICIAL USE ONLY

SVPO NUMBER
200600117

FILING DATE
2/27/2006

7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION *(corporation, partnership, association, etc.)*
Government Institution

8. IF INCORPORATED, GIVE STATE OF INCORPORATION

9. DATE OF INCORPORATION

10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. *(First person listed will receive all papers)*
Dr. William Meyer
c/o Rutgers University
Foran Hall
Plant Biology & Pathology Dept. 59 Dudley Road
New Brunswick, NJ
08901
(BT: 8/4/2006)

FEES RECEIVED

FILING AND EXAMINATION FEES:
$ 4,382.00
DATE 2/27/2006

CERTIFICATION FEE:
$ 768.00
DATE 12/18/2007

11. TELEPHONE *(Include area code)*
(732) 932-9711

12. FAX *(Include area code)*
(732) 932-9441

13. E-MAIL

14. CROP KIND *(Common Name)*
Strong Creeping Red Fescue

16. FAMILY NAME *(Botanical)*
Poaceae

15. GENUS AND SPECIES NAME OF CROP
Festuca rubra rubra

17. IS THE VARIETY A FIRST GENERATION HYBRID?
☐ YES ☑ NO

18. DOES THE VARIETY CONTAIN ANY TRANSGENES? *(OPTIONAL)*
☐ YES ☑ NO
IF SO, PLEASE GIVE THE ASSIGNED USDA-APHIS REFERENCE NUMBER FOR THE APPROVED PETITION TO DEREGULATE THE GENETICALLY MODIFIED PLANT FOR COMMERICALIZATION. _____

19. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED
(Follow instructions on reverse)

a. ☑ Exhibit A. Origin and Breeding History of the Variety
b. ☑ Exhibit B. Statement of Distinctness
c. ☑ Exhibit C. Objective Description of Variety
d. ☑ Exhibit D. Additional Description of the Variety *(Optional)*
e. ☑ Exhibit E. Statement of the Basis of the Owner's Ownership
f. ☑ Voucher Sample *(2,500 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository)*
g. ☑ Filing and Examination Fee ($3,652), made payable to "Treasurer of the United States" *(Mail to the Plant Variety Protection Office)*

20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? *(See Section 83(a) of the Plant Variety Protection Act)*
☐ YES *(If "yes", answer items 21 and 22 below)* ☑ NO *(If "no", go to item 23)*

21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES?
☑ YES ☐ NO
IF YES, WHICH CLASSES? ☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED

22. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
☐ YES ☑ NO
IF YES, SPECIFY THE NUMBER 1,2,3, etc. FOR EACH CLASS.
☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED
(If additional explanation is necessary, please use the space indicated on the reverse.)

23. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES?
☐ YES ☑ NO
IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. *(Please use space indicated on reverse.)*

24. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT *(PLANT BREEDER'S RIGHT OR PATENT)*?
☐ YES ☑ NO
IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. *(Please use space indicated on reverse.)*

25. The owners declare that a viable sample of basic seed of the variety has been furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate.

The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Owner(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF OWNER		SIGNATURE OF OWNER	
NAME *(Please print or type)*	Daniel Rossi	NAME *(Please print or type)*	STEVEN P. TUBBS
CAPACITY OR TITLE	Sr. Assoc. Dean	CAPACITY OR TITLE	PRESIDENT
DATE	1/13/06	DATE	2/05/06

(See reverse for instructions and information collection burden statement)

ST-470 (04-03) designed by the Plant Variety Protection Office using Word 2002.

Exhibit A:

Origin and Breeding History

Fortitude Strong Creeping Red Fescue

1. Fortitude strong creeping red fescue (*Festuca rubra* L. subsp. *rubra*) is a tuf-type cultivar selected for leaf spot resistance (caused by the fungus *Dreschlera dictyoides* Shoemaker) from the progenies of 21 clones.

Ninety-six percent of the harvested plants trace their maternal origin to a plant found in the Rose City Cemetery, Portland, Oregon. This plant contained an endophyte (Epichloe festucae [Chardl] currently referred to as the Rose City endophyte. One hundred percent of the parental germplasm of Fortitude traces its origin to plants selected from old turfs of the United States during the period from 1962 through 1990 by turfgrass scientists at the New Jersey Agricultural Experiment Station.

Plants selected from old turfs were subjected to selection and evaluation in spaced-plant nurseries, frequently mowed turf trials, and mowed spaced-plants. Progenies from intercrossing the best performing selections were then subjected to many cycles of recurrent phenotypic selection with each cycle followed by single-plot progeny tests in closely mowed turf trials. Tillers were subsequently selected from the best performing turf plots to initiate additional cycles of selection. Greenhouse facilities were also used to select disease resistant, lower-growing plants with abundant tillers, and a rich, bright, dark green color.

The most promising plants were identified by their persistence, appearance and performance in spaced-plant nurseries, mowed clonal evaluation tests, and single-plant progeny trials under turf maintenance. Intercrosses of the best performing plants were subjected to varying cycles of phenotypic and genotypic selection depending on their date of collection. New sources of germplasm were added to the breeding program as it became available from the continuing collection program. Each cycle of selection showed continued progress in producing lower-growing, darker green, finer leaf texture, attractive plants with improved turf performance scores.

Single-plot progenies of 707 clones selected from the Rutgers germplasm cycled as described above were seeded in individual turf plots at North Brunswick and Adelphia, New Jersey during the late summers of 1992 and 1993. A total of 1,020 plants were selected from the best performing progenies following a period of summer stress in August, 1994. Selection was based on turf performance and appearance of the plots at the time of selection. Selected

plants were established in greenhouse flats prior to their transfer to an isolated spaced-plant nursery in September, 1994. Two nurseries consisting of 1,020 plants total were established in the spring of 1995 from the same best performing turf plots as above.

Following a cycle of selection for low growth habit, fine leaf texture and dark-green color under a mowed spaced-plant tiller plot evaluation trial established in 1998 containing 19,200 plants, 116 plants were selected from these tiller plot evaluation trials for leaf spot tolerance and medium-early maturity. These plants were moved in April and allowed to develop seed heads in an isolated crossing block called 'TLS' Seed from these plants was germinated in greenhouse flats and screened for high shoot density, low growth habit, and dark green color to approximately 25%. These 1,500 plant were used to establish a nursery for bright dark green color, low growth habit, freedom from leaf spot disease and medium maturity and moved to an isolated crossing block in the spring of 2000 and designated 'TL3'. Thirty-three plants were harvested from the crossing block based on high seed yield, good floret fertility and freedom from disease.

Another crossing block designated 'TL5' was developed from 10 plants selected from the mowed-spaced plant evaluation trial, described above, for early spring green up and freedom from leaf spot disease. Nine plants were harvested from this crossing block based on high seed yield, good floret fertility and freedom from disease at the time of harvest.

Two nurseries were established in the fall of 2000 from the seedlings from these two crossing blocks. One nursery contained 1,500 plants selected from the 'TL3' crossing block and the other nursery contained 600 plants selected from the 'TL5' crossing block. Twenty-two plants were selected from these nurseries in the spring of 2002 based on medium maturity, bright green color, freedom from leaf spot disease, and good seed yield potential. Twenty-one plants were harvested from this crossing block based on high seed yield, good floret fertility and freedom from disease at the time of harvest. One turf plot of each line was established at Adelphia in the fall of 2002 and 1 gram of each line was sent to Advanta Seeds Pacific for increase and further nursery evaluation.

In the fall of 2002 a seed increase block containing 60 plants of 21 progeny lines (1,260 plants) was established in Albany, Oregon. In 2003 negative mass selection was used and 0.61 % of the plants were rogued from the population. The remaining plants were harvested in bulk and designated TL53 breeder seed. This seed was used to establish a morphological nursery for Plant Variety Protection (PVP) measurements.

2. Breeder Seed Maintenance:

A breeder seed multiplication was planted in isolation in 2002 in Albany, Oregon. Seed was harvested in bulk in 2003 and is maintained in cold storage. Seed propagation is limited to three generations, one each of foundation, registered, and certified.

3. Stability and Uniformity:

Fortitude has been a stable uniform cultivar over 2 generations. No off-type or variant plants have been observed during the multiplication or reproduction. During the breeder seed multiplication 0.61 % of the plants were removed. These types were not observed during the subsequent generations. Turf plots of Fortitude have been uniform and stable.
(BT: 8/4/2006, per applicant's authorization).

Exhibit B:

Novelty Statement of Fortitude Strong Creeping Red Fescue

The following summary outlines the distinctive characteristics of Fortitude. The novelty of Fortitude is based on the unique combination of these characteristics. Fortitude is most similar to Boreal, but may be differentiated by using the following criteria:

1) The anthesis date of Fortitude is earlier than Boreal (tables 1A, 1B).

2) Fortitude has a shorter mature plant height compared to Boreal (tables 1A, 1B)

3) The Panicle length of Fortitude is at least 75 mm shorter than Boreal (tables 1A, 1B).

4) The flag leaf morphological characteristics; height, length, sheath length, and internode length of Fortitude are significantly shorter compared to Boreal (tables 1A, 1B).

5) The leaf blade characteristics; length, height, and sheath length of Fortitude are shorter than Boreal (tables 1A, 1B).

6) Fortitude has a shorter lemma and glume length compared to Boreal (tables 2A, 2B).

7) Fortitude has a reduced awn length compared to Boreal (tables 2A, 2B)

8) The length of the spikelet for Fortitude is shorter compared to Boreal (tables 2A, 2B).

9) Fortitude expresses a higher frequency of plants with an erect growth habit compared to Boreal (tables 5A, 5B).

10) The red pigmentation of the panicles is expressed at a lower level in Fortitude compared to Boreal (tables 3A, 3B).

FORM APPROVED: OMB NO. 0581-0055

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURE MARKETING SERVICE
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MARYLAND 20705

EXHIBIT C
(Fine Leaved Fescues)

OBJECTIVE DESCRIPTION OF VARIETY
FINE LEAVED FESCUES
(Festuca spp.)

NAME OF APPLICANT(S)	TEMPORARY DESIGNATION	VARIETY NAME.
Rutgers, The State University of New Jersey ~~C/O Dr. William Meyers~~	TL53	Fortitude

ADDRESS *(Street and No. or R.F.D. No., City, State, Zip Code)* OR: 8/4/2006)

Foran Hall
Plant Biology & Pathology Dept.
59 Dudley Road
New Brunswick, New Jersey
08901

FOR OFFICIAL USE ONLY
PVPO NUMBER
2006 0017

Place the appropriate number that describes the varietal character of this variety in the boxes below. Use leading zeroes when necessary: (e.g., 0 8 or 0 9). Characteristics described including numerical measurements, should represent those that are typical for the variety. Measured data should be for SPACED PLANTS. Royal Horticulture Society or any recognized color fan may be used to determine plant colors; designate system used: _____

Describe location of test area, conditions and number of plants used: See section 16, page 4.

1. SPECIES: (With comparison varieties for use below - use varieties within species of application variety)

____	1 = *F. rubra ssp. commutata* (Chewings)	11 = Cascade 14 = Banner	12 = Highlight 15 = Barfalla	13 = Jamestown
____	2 = *F. rubra ssp. litoralis* (Creeping Red)	21 = Dawson 24 = Pennlawn	22 = Starlight	23 = Merlin
31	3 = *F. rubra ssp rubra* (Spreading Red)	31 = Boreal 34 = Ensylva		
____	4 = *F. ovina* (Sheep)	41 = Covar		
____	5 = *F. longifolia* (Hard)	51 = Durar	52 = Biljart (C-26)	53 = Scaldis
____	6 = *F. tenuifolia* (Fine-Leaved Sheep)	61 = Panda	62 = Barok	
____	7 = Other *(Specify)* F._____			

2. CYTOLOGY:
5 | 6 Chromosome Number 4 Ploidy 1 = diploid 2 = tetraploid 3 = hexaploid 4 = octoploid

3. ADAPTATION: (0 = Not Tested; 1 = Not Adapted; 2 = Adapted)
2 Northeast 0 Southeast 0 North Central 2 Pacific N.W. ____ Other *(Specify)* _____

4. MATURITY: Date First Headed (panicle emergence) Location(s) of Trial(s) _____
3 Maturity Class:
1 = Very Early (Covar) 2 = Early (Highlight) 3 = Medium Early (Boreal, Dawson)
4 = Medium Late (Cascade, Ruby) 5 = Late (Jamestown, Agram) 6 = Very Late

Date Headed 35.75 days after March 1,

| |	Days earlier than	| |
| |	Maturity same as	31
| |	Days later than	| |

} Comparison Variety

5. Plant Height: (At maturity; to top of panicle; Average of 10 culms)

550. 33 mm height

127.77	mm shorter than	31
	Height same as	| |
| | |	mm taller than	| |

} Comparison Variety

6. GROWTH HABIT: (Mature)
1 1 = Erect (Ruby) 2 = Semi-erect (Highlight) 3 = Prostrate (Silvana)

7. RHIZOMES:
\| \| mm Length \| \| mm Width \| \| mm Internode length
3 1 = Absent (Highlight) 2 = Weakly Creeping (Dawson) 3 = Strongly Creeping (Boreal)
4 = Very Strongly Creeping (Fortress)

8. LEAF BLADE:

7 Color: 1 = Light Green (Starlight) 2 = Medium Light Green (Highlight) 3 = Medium Dark Green (Ruby, Agram) 4 = Dark Green (Jamestown, Manoir) 5 = Bluegreen (Saphir) 6 = Graygreen (Scaldis) 7 = Other (*Specify*) Darker than Boreal

1 Glaucosity (Sowing Year): 1 = Absent (Koket) 2 = Present (Vendrome)

1 Anthocyanin: 1 = Absent 2 = Present

2 Hairs (Basal) 1 = Absent 2 = Present

1 Margins: 1 = Smooth 2 = Semi-rough 3 = Rough

1 Margin folding (closure): 1 = Rolled inward (closed-Highlight) 2 = Flat (open-Jamestown, Engina)

3 Width class: 1 = Very Fine (Agram, Frida) 2 = Fine (Jamestown, Highlight, Banner, Dawson) 3 = Medium Fine (Fortress, Ruby, Scaldis) 4 = Medium Coarse (Engina)

191.85 mm Length (flag leaf)

104.00 mm Shorter than 31

Blade length same as . . . . . |

| mm Longer than . . . . . |

} Comparison Variety

3.53 mm Width (flag leaf)

▲ | mm Narrower than . . . . . |

Blade width same as 31

▲ | mm Wider than . . . . . |

} Comparison Variety

9. LEAF SHEATH:

____ Anthocyanin (seedling): 1 = Absent (Highlight) 2 = Present (Jamestown, Fortress, Marga)

2 Auricle Hairiness: 1 = Absent 2 = Present

2 Margins: 1 = Open (Highlight) 2 = Closed (Jamestown)

10. PANICLE (Mature plant):

3 Shape: 1 = Narrow-tapering 2 = Ovate 3 = Oblong 4 = Other (*Specify*) _____

1 Type: 1 = Open 2 = Intermediate 3 = Compact

1 Orientation: 1 = Erect 2 = Nodding

1 Branch Pubescence: 1 = Glabrous 2 = Pubescent

4 Anther Color:

2 Glume Color (At 50% flowering):

} 1 = Yellowish Green 2 = Green 3 = Bluish Green 4 = Purplish 5 = Reddish 6 = Other (*Specify*) _____

457.90 mm Length

75.70 mm Shorter than 31

Panicle length same as . . . . . |

| mm Longer than . . . . . |

} Comparison Variety

11. PALEA:

2 Hairs (On keels or margins): 1 = Absent (Banner) 2 = (Agram, Scaldis, Olds) 3 = Long (Ranier, Fortress, Jamestown)

12. LEMMA (Mature):

2 Hairs: 1 = Absent (Jamestown) 2 = Several 3 = Many (Highlight)

5.85 mm Lemma Length

0.93 mm Shorter than 31

Lemma length same as . . . . . | } Comparison Variety

| mm Longer than . . . . . |

1.15 mm Lemma Width

| | mm Narrower than . . . . . | } Comparison Variety

Lemma width same as 31

| | mm Wider than . . . . . |

2 Awns: 1 = Absent 2 = Present

1.38 mm Awn Length

0.22 mm Shorter than 31

Awn length same as . . . . . | } Comparison Variety

| mm Longer than . . . . . |

13. SEED (With lemma & palea):

4 Size Class (g/1000 seed):
1 = <.9g (Biljart, Dawson) 2 = .91-< 1.1g (Jamestown, Highlight)
3 = 1.1 - 1.3 g (Fortress, Novorubra) 4 = > 1.3g (Boreal, Golfrood)

1,470.00 mg per 1000 seed

| | | mg per 1000 seed less than . . . . . | } Comparison Variety

Seed Weight same as . . . . . |

50.00 mg per 1000 more than 31

14. DISEASE, INSECT, AND NEMATODE REACTION (0 = Not Tested, 1 = Susceptible, 2 = Resistant):

0	Melting-out *Drechslera poae* (*Helminthosporium vagans*)	0	Stripe rust *P. striiformis*
0	Leaf spot *D. siccans*	0	Leaf rust *P. poae-nemoralis*
0	Net blotch *D.* dictyoides	0	*P. crandalli*
0	Leaf spot *Bipolaris sorkiniana*	0	Pythium Blight *Pythium ultimum*
0	Brown patch *Rhizoctonia solani*	0	Red thread *Corticum fusciforme*
0	Powdery Mildew *Erysiphe graminis*	0	Dollar spot *Sclerotinia homoeocarpa*
0	Stripe smut *Ustilago striiformis*	0	Insect _____
0	F. Patch, Pink snow-mold *Fusarium nivale*	0	Nematode _____
0	Fusarium blight *F. tricinctum, F. roseum*	0	Other _____
0	Gray snow mold *Typhula iotana*	0	Other _____
0	Stem rust *Puccinia graminis*	0	Other _____

15. GIVE VARIETY OR VARIETIES THAT MOST CLOSELY RESEMBLE THE APPLICATION VARIETY. For the following characteristics indicate Degree of Resemblance by placing the column marked, D. R., 1 of the following numbers:

1 = Application variety is less than comparison variety. 2 = Same As
3 = More than, better, greater, darker, more disease resistant, etc.

CHARACTER	VARIETY	D. R.	CHARACTER	VARIETY	D.R.
Rhizome Length	Boreal	2	Growth Habit	Boreal	3
Leaf Width	Boreal	2	Leaf Color	Boreal	3
Panicle Color	Boreal	3	Panicle Shape	Boreal	2
Winter Color	Boreal	2	Cold Injury	Boreal	2
Shade Tolerance	Boreal	2	Heat	Boreal	2
Drought	Boreal	2	Disease*	Boreal	2

** Specify each disease evaluated.*

16. ADDITIONAL DESCRIPTION: (Use additional sheets as required)
Describe all characteristics that cannot be adequately described in the form above in Exhibit D. Comparative varieties should be used as may be appropriate, such as for disease. Append all comparative trial and evaluation data, including measured characters, environmental, and disease test.

A morphological nursery designated 03PVPFRR was established in September 2003, in Albany, Oregon. Experimental design consisted of 6 entries; 4 replications per entry; 20 plants per replication; for a total of 80 plants per entry. Boreal, Shademaster and Flyer were used as standards. Plants were established on 2.5 foot centers with a skip row between replications and between entries.

The nursery received 30 pounds of nitrogen per acre rate following establishment and 50 pounds of nitrogen per acre per year in 2004 and 2005. The fertilizer source was 15 - 15 - 15 and was applied as a split application with ½ applied in the spring and ½ in the autumn. The nursery was sprayed twice each spring, 3 weeks between applications, with Quilt (2oz/acre rate), to prevent stem rust. One pound of Karmex per acre rate was applied during the late summer to prevent emergence of volunteer seedlings.

Data was analyzed using analysis of variance for a randomized complete block design. Means were calculated for each replication and then analyzed for tables 1A, 1B, 2A, and 2B.

Tables 3A, 3B, 4A, 4B, 5A, and 5B data were analyzed using binary data confidence intervals. The confidence intervals are given for the characteristics which expressed significant differences.

Exhibit D:

Additional Description

Fortitude Strong Creeping Red Fescue

Fortitude has improved characteristics over current cultivars, such as Boreal, Shademaster, and Flyer. Fortitude has a later maturity, with a heading date and anthesis date later than Tiara, Shademaster, and Flyer (tables 1A, 1B). The mature plant height of Fortitude is shorter than ASC266, Shademaster, Flyer, and Boreal (tables 1A, 1B). Fortitude has a reduced panicle length compared to ASC266, Shademaster, Flyer, and Boreal (tables 1A, 1B). The flag leaf characteristics; height, length, and sheath length of Fortitude are all shorter compared to ASC266, Shademaster, Flyer, and Boreal (tables 1A, 1B). The flag leaf sheath length of Fortitude is also shorter than Tiara (tables 1A, 1B). The leaf blade characteristics; height, length, and sheath length of Fortitude are all shorter compared to ASC266, Shademaster, Flyer, and Boreal (tables 1A, 1B). Fortitude has a shorter lemma length than Tiara, ASC266, Shademaster, Flyer, and Boreal (tables 2A, 2B). The lemma awn length and the glume length of Fortitude is significantly shorter than ASC266, Shademaster and Boreal (tables 2A, 2B). Fortitude has a shorter spikelet than Tiara, ASC266, Shademaster, Flyer, and Boreal (tables 2A, 2B). The length of the longest branch of the the lower most whorl is significantly shorter than ASC266, Shademaster, Flyer, and Boreal (tables 2A, 2B). There are a reduced number of spikelets on the longest branch of the lower most whorl of Fortitude compared to Shademaster and Boreal, but more than Tiara (tables 2A, 2B, illus. 1). Fortitude also has fewer spikelets per panicle than Shademaster and Boreal, but more than Tiara (tables 2A, 2B).

Fortitude may be differentiated from Boreal on several visual characteristics. The red pigmentation of the panicle is expressed at a lower frequency in Fortitude than Boreal (tables 3A, 3B). The panicle shape of Fortitude is less narrow compared to ASC266, Shademaster and Flyer (tables 3A, 3B). Fortitude expresses a higher percentage of plants with an erect growth habit compared to Shademaster, Flyer, and Boreal (tables 5A, 5B).

Table 1A

2004 Morphological Data

Cultivar	Heading Date days after March 1	Anthesis Date days after March 1	Genetic Color (Scale: 1-9, 9=Darkest) (BT: 8/4/06)	Mature Plant Height (mm)	Plant Width (mm)	Panicle Length (mm)	Flag Leaf Length (mm)	Flag Leaf Width (mm)	Flag Leaf Height (mm)	Flag Leaf Sheath Length (mm)	Flag Leaf Internode Length (mm)	Leaf Blade Length (mm)	Leaf Blade Width (mm)	Leaf Blade Height (mm)	Leaf Sheath Length (mm)
Fortitude	42.75	49.00	5.95	550.33	238.90	457.90	191.85	3.53	201.28	104.40	64.73	147.65	4.23	92.10	62.48
Tiara	38.75	48.50	6.55	576.10	205.08	488.48	189.50	3.40	213.45	116.35	68.28	140.45	3.80	95.60	62.43
ASC266	41.50	48.00	5.95	655.98	276.95	517.70	238.65	3.83	276.70	134.60	98.98	177.60	4.30	121.60	77.15
Shademaster	34.50	45.00	5.30	762.28	265.58	617.80	276.65	3.48	306.90	162.15	105.85	196.53	3.85	129.15	87.08
Flyer	36.25	45.25	5.40	760.08	244.63	600.78	276.93	3.60	326.00	163.65	118.03	209.93	4.10	145.08	95.08
Boreal	50.25	55.00	5.00	678.10	244.45	533.60	295.85	3.73	306.78	166.83	98.40	226.15	4.18	139.53	98.60
LSD 5%	2.28	1.51	0.25	42.29	40.00	44.52	15.83	0.24	20.80	6.79	9.53	12.82	0.32	14.87	5.90
C.V.	4.52	2.52	3.59	5.14	13.12	6.70	5.21	5.29	6.17	3.88	8.32	5.65	6.42	9.96	5.92

■ Cultivar under evaluation
■ Significant difference over two years one locations.
■ Significant difference over one year one location.
Measurements taken in Albany, Oregon
4 reps; 20 plants/rep = 80 data points

Table 1B

2005 Morphological Data

Cultivar	Heading Date days after March 1	Anthesis Date days after March 1	Genetic Color (Scale: 1-9, 9=Darkest) (BT: 8/4/06)	Mature Plant Height (mm)	Plant Width (mm)	Panicle Length (mm)	Flag Leaf Length (mm)	Flag Leaf Width (mm)	Flag Leaf Height (mm)	Flag Leaf Sheath Length (mm)	Flag Leaf Internode Length (mm)	Leaf Blade Length (mm)	Leaf Blade Width (mm)	Leaf Blade Height (mm)	Leaf Sheath Length (mm)
Fortitude	35.75	51.75	5.25	677.60	282.38	542.98	238.23	3.00	260.08	127.35	113.20	184.40	2.38	99.40	79.03
Tiara	28.25	50.00	5.65	727.83	251.63	587.18	245.03	3.15	277.98	142.35	117.15	189.08	2.73	104.83	85.03
ASC266	28.25	48.00	5.35	844.45	289.38	677.95	289.55	3.35	332.20	167.60	144.50	215.85	2.95	126.40	96.70
Shademaster	27.75	50.00	4.93	888.98	282.00	729.20	319.10	3.13	328.15	186.73	138.95	227.90	2.43	115.15	103.23
Flyer	25.75	49.00	5.13	929.03	286.50	751.78	325.03	3.13	377.15	191.60	156.88	237.03	2.65	138.48	113.65
Boreal	38.50	53.50	5.03	907.15	284.08	723.15	388.90	3.98	385.90	207.73	154.28	291.40	3.40	145.15	126.85
LSD 5%	3.38	1.66	0.23	32.26	20.47	33.78	16.08	0.34	26.06	7.39	12.97	13.60	0.26	13.89	6.34
C.V.	8.87	2.66	3.59	3.14	5.91	4.08	4.31	8.38	6.43	3.49	7.61	4.89	7.68	9.21	5.07

■ Cultivar under evaluation
■ Significant difference over two years one location.
■ Significant difference over one year one location.
Measurements taken in Albany, Oregon
4 reps; 20 plants/rep = 80 data points

Table 2A 2004 Laboratory Morphological Data

Cultivar	Lemma Length (mm)	Lemma Width (mm)	Lemma Awn Length (mm)	Glume Length (mm)	Florets per Spikelet	Spikelet Length (mm)	Length of the Longest Branch Lower Most Whorl (mm)	Distance Between Lower Most Whorls (mm)	Number of Spikelets on the Longest Whorl	Spikelets per Panicle	Length of Panicle from Lower Most Whorl to Tip (mm)
Fortitude	5.85	1.15	2.98	4.90	6.25	12.73	54.08	31.13	11.50	39.25	102.78
Tiara	6.10	1.13	3.15	4.90	7.25	14.20	55.30	32.48	8.25	30.00	104.68
ASC266	6.25	1.15	3.53	5.45	6.75	14.25	65.63	34.60	11.75	40.00	123.93
Shademaster	6.35	1.10	3.45	5.45	6.75	15.25	75.05	40.80	14.00	46.00	145.63
Flyer	6.85	1.15	3.50	5.65	7.00	16.13	78.95	42.55	11.50	39.25	147.80
Boreal	6.78	1.13	3.78	6.03	7.00	16.18	86.68	44.00	14.75	47.75	159.18
LSD 5%	0.20	0.07	0.26	0.25	0.64	0.58	5.69	2.04	1.99	4.67	8.46
C.V.	2.53	4.65	6.23	3.73	7.56	3.15	6.62	4.38	13.45	9.34	5.22

■ Cultivar under evaluation
■ Significant difference over two years one location.
■ Significant difference over one year one location.
Measurements taken in Albany, Oregon
4 reps; 20 plants/rep = 80 data points

Table 2B 2005 Laboratory Morphological Data

Cultivar	Lemma Length (mm)	Lemma Width (mm)	Lemma Awn Length (mm)	Glume Length (mm)	Florets per Spikelet	Spikelet Length (mm)	Length of the Longest Branch Lower Most Whorl (mm)	Distance Between Lower Most Whorls (mm)	Number of Spikelets on the Longest Whorl	Spikelets per Panicle	Length of Panicle from Lower Most Whorl to Tip (mm)
Fortitude	5.58	0.98	1.38	4.38	5.50	10.98	58.30	34.20	7.25	41.00	112.60
Tiara	5.98	1.03	1.45	4.58	6.75	13.18	61.03	34.83	6.00	32.00	118.35
ASC266	5.93	1.05	1.65	5.00	6.25	12.08	67.25	37.75	7.75	41.00	135.10
Shademaster	6.08	1.03	1.68	5.13	5.75	12.40	72.40	42.35	8.75	46.75	154.05
Flyer	6.53	1.03	1.58	5.35	6.50	13.88	82.38	45.38	8.00	40.00	160.33
Boreal	6.53	1.03	1.60	5.55	6.00	13.58	93.08	47.35	10.00	52.50	174.30
LSD 5%	0.22	0.05	0.21	0.25	0.75	1.05	5.63	2.55	0.87	2.78	7.28
C.V.	2.96	4.10	10.91	4.05	9.85	6.68	6.27	5.11	8.86	5.31	4.12

■ Cultivar under evaluation
■ Significant difference over two years one location.
■ Significant difference over one year one location.
Measurements taken in Albany, Oregon
4 reps; 20 plants/rep = 80 data points

Panicle Type Inflorescence

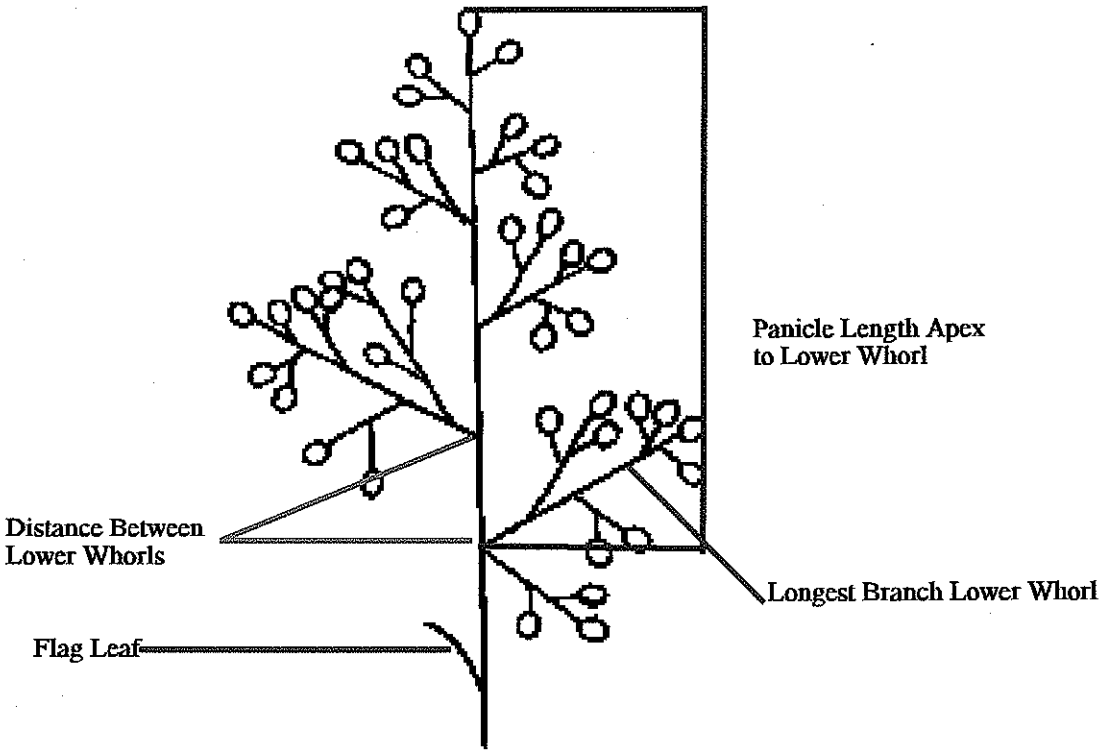

Illustration 1.

Table 3A 2004 Morphological Measurements of the Panicle

Cultivar	Anther Color % Yellow	Anther Color % Purple	Panicle Color % Red			Glume Color % Purple	Panicle Orientation % Nodding	Panicle Shape Narrow			Panicle Shape %Oblong	Panicle Type % Open	Panicle Type % Compact	Percent Branches of Lower Whorl =1	Percent Branches of Lower Whorl =2	Percent Branches of Lower Whorl >3	Panicle Branch Pubescence % Present
			% Present	Lower CI	Upper CI			% Present	Lower CI	Upper CI							
Fortitude	1	99	18	0.096	0.264	15	4	31	0.209	0.411	69	69	31	6	76	18	1
Tiara	0	100	8	0.021	0.139	19	2	32	0.227	0.433	68	68	33	16	79	5	0
ASC266	1	99	19	0.104	0.279	16	2	59	0.482	0.698	41	40	59	15	74	11	13
Shademaster	1	99	20	0.112	0.288	24	14	59	0.482	0.698	41	41	59	24	65	11	11
Flyer	0	100	20	0.112	0.288	27	10	54	0.431	0.649	46	46	54	31	55	14	16
Boreal	3	97	69	0.589	0.791	40	9	42	0.322	0.538	58	58	43	19	75	6	15
LSD (0.05)																	

■ Cultivar under evaluation
▒ Significant difference over two years one location.
▒ Significant difference over one year one location.
Measurements taken in Albany, Oregon
4 reps; 20 plants/rep = 80 data points

Table 3B 2005 Morphological Measurements of the Panicle

Cultivar	Anther Color % Yellow	Anther Color % Purple	Panicle Color % Red			Glume Color % Purple	Panicle Orientation % Nodding	Panicle Shape Narrow			Panicle Shape %Oblong	Panicle Type % Open	Panicle Type % Compact	Percent Branches of Lower Whorl =1	Percent Branches of Lower Whorl =2	Percent Branches of Lower Whorl >3	Panicle Branch Pubescence % Present
			% Present	Lower CI	Upper CI			% Present	Lower CI	Upper CI							
Fortitude	5	95	37	0.264	0.476	25	0	21	0.121	0.299	79	79	21	4	84	12	4
Tiara	3	97	46	0.351	0.569	30	70	38	0.274	0.489	62	63	38	14	84	2	6
ASC266	3	97	55	0.441	0.659	27	79	61	0.503	0.717	39	39	61	11	83	6	15
Shademaster	5	95	65	0.545	0.755	49	100	45	0.341	0.559	55	55	45	12	80	8	16
Flyer	3	97	47	0.361	0.579	36	100	61	0.503	0.717	39	39	61	30	60	10	19
Boreal	1	99	69	0.589	0.791	41	94	54	0.431	0.649	46	46	54	6	89	5	24
LSD (0.05)																	

■ Cultivar under evaluation
▒ Significant difference over two years one location.
▒ Significant difference over one year one location.
Measurements taken in Albany, Oregon
4 reps; 20 plants/rep = 80 data points

Table 4A 2004 Additional Measurements of the Leaf Blade and Seed

Cultivar	Node Color % Distinct	Lemma Hairs % Several	Lemma Hairs % Many	Lemma Awn % Present	Palea Hairs % Present	Leaf Blade Margin Hairs % Present	Leaf Sheath Auricle Hairs % Short	Leaf Sheath Auricle Hairs % Long	Leaf Sheath Surface Hairs % Glaborous	Leaf Sheath Collar Hairs % Glaborous	Leaf Blade Surface Hairs % Present
Fortitude	41	69	29	100	100	51	42	14	10	100	100
Tiara	36	95	4	100	100	48	33	20	3	100	100
ASC266	44	68	30	100	100	57	35	10	1	100	100
Shademaster	31	71	8	100	100	49	15	4	13	100	100
Flyer	63	79	8	100	100	75	27	11	8	100	100
Boreal	65	82	5	100	100	71	25	9	16	100	100

■ Cultivar under evaluation
■ Significant difference over two years one location.
■ Significant difference over one year one location.
Measurements taken in Albany, Oregon
4 reps; 20 plants/rep = 80 data points

Table 4B 2005 Additional Measurements of the Leaf Blade and Seed

Cultivar	Node Color % Distinct	Lemma Hairs % Several	Lemma Hairs % Many	Lemma Awn % Present	Palea Hairs % Present	Leaf Blade Margin Hairs % Present	Leaf Sheath Auricle Hairs % ~~Present~~ Short	Leaf Sheath Auricle Hairs % Long	Leaf Sheath Surface Hairs % Glaborous	Leaf Sheath Collar Hairs % Glaborous	Leaf Blade Surface Hairs % Present
Fortitude	44	68	33	100	100	41	30	28	28	100	100
Tiara	24	95	5	100	100	49	23	19	12	100	100
ASC266	23	66	34	100	100	55	41	7	0	100	100
Shademaster	24	83	11	100	100	57	7	10	4	100	100
Flyer	34	88	11	100	100	61	8	16	12	100	100
Boreal	38	93	5	100	100	54	18	19	17	100	100

BT: 5/7/2007

■ Cultivar under evaluation
■ Significant difference over two years one location.
■ Significant difference over one year one location.
Measurements taken in Albany, Oregon
4 reps; 20 plants/rep = 80 data points

Table 5A 2004 Additional Morphological Measurements

Cultivar	Growth Habit Erect			Growth Habit at Anthesis	Growth Habit at Anthesis	Leaf Blade Anthocyanin	Leaf Blade Margin Folding	Leaf Sheath Margins	Spring Growth Habit	Spring Growth Habit	Spring Growth Habit	Seed Weight mg per 1,000 seeds
	% Present	Lower CI	Upper CI	% Semi-Erect	% Prostrate	% Purple	% Closed	% Open	% Prostrate	% Semi-Erect	% Erect	
Fortitude	91	0.968	1.012	7	2	0	100	0	11	88	1	1567
Tiara	95	0.847	0.973	4	1	0	100	0	8	91	1	1329
ASC266	99	0.902	0.998	1	0	0	100	0	9	90	1	1443
Shademaster	11	0.041	0.179	70	19	0	100	0	11	86	3	1300
Flyer	13	0.056	0.204	74	13	0	100	0	11	88	1	1355
Boreal	14	0.064	0.216	84	2	0	100	0	8	91	1	1418
LSD (0.05)												

Cultivar under evaluation
Significant difference over two years one location.
Significant difference over one year one location.
Measurements taken in Albany, Oregon
4 reps; 20 plants/rep = 80 data points

Table 5B 2005 Additional Morphological Measurements

Cultivar	Growth Habit Erect			Growth Habit at Anthesis	Growth Habit at Anthesis	Leaf Blade Anthocyanin	Leaf Blade Margin Folding	Leaf Sheath Margins	Spring Growth Habit	Spring Growth Habit	Spring Growth Habit	Seed Weight mg per 1,000 seeds
	% Present	Lower CI	Upper CI	% Semi-Erect	% Prostrate	% Purple	% Closed	% Open	% Prostrate	% Semi-Erect	% Erect	
Fortitude	99	0.874	0.986	1	0	0	100	0	1	99	0	1470
Tiara	96	0.968	1.012	4	0	0	100	0	0	95	5	1450
ASC266	93	0.917	1.003	7	0	0	100	0	0	100	0	1464
Shademaster	9	0.027	0.156	91	0	0	100	0	0	99	1	1316
Flyer	5	0.002	0.098	95	0	0	100	0	1	98	1	1326
Boreal	10	0.034	0.166	90	0	0	100	0	2	98	0	1420
LSD (0.05)												

Cultivar under evaluation
Significant difference over two years one location.
Significant difference over one year one location.
Measurements taken in Albany, Oregon
4 reps; 20 plants/rep = 80 data points

Table 6 Turf Data

Cultivar	2003 Turf Quality	2004 Turf Quality	2004 Dollar Spot	2004 Summer Patch
Fortitude	6.10	5.90	7.30	7.20
Jasper II	5.20	3.90	3.70	5.70
Audubon	5.20	4.10	4.70	6.50
Jasper	4.20	3.40	4.30	
LSD (0.05)	0.50	0.60	2.70	1.60

Cultivar under evaluation
Significant difference over two years one location.
Significant difference over one year one location.
Measurements taken in Adelphia, New Jersey, Rutgers University
Data taken from Rutgers 2003 Turfgrass Proceedings; table 2, page 34-38.
Turf data collected in a 1-9 scale; 9=best

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U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

EXHIBIT E
STATEMENT OF THE BASIS OF OWNERSHIP

Application is required in order to determine if a plant variety protection certificate is to be issued (*7 U.S.C. 2421*). The information is held confidential until the certificate is issued (*7 U.S.C. 2426*).

#200600117

1. NAME OF APPLICANT(S)	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER	3. VARIETY NAME
Rutgers, The State University of New Jersey [redacted] (BT: 8/4/2006)	TL53	Fortitude
4. ADDRESS (*Street and No., or R.F.D. No., City, State, and Zip, and Country*)	**5. TELEPHONE** (*Include area code*)	**6. FAX** (*Include area code*)
Foran Hall Plant Biology & Pathology Dept. 59 Dudley Road, New Brunswick, NJ 08901	732 - 932 - 9711 ext 160	732 - 932 - 9441
	7. PVPO NUMBER 200600117	

8. Does the applicant own all rights to the variety? Mark an "X" in the appropriate block. **If no, please explain.**

☒ YES ☐ NO

9. Is the applicant (individual or company) a U.S. national or a U.S. based company? **If no, give name of country.**

☒ YES ☐ NO

10. Is the applicant the original owner? **If no, please answer one of the following:**

☒ YES ☐ NO

a. If the original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. National(s)?

☒ YES ☐ NO **If no, give name of country**

b. If the original rights to variety were owned by a company(ies), is (are) the original owner(s) a U.S. based company?

☒ YES ☐ NO **If no, give name of country**

11. Additional explanation on ownership *(If needed, use the reverse for extra space)*:

PLEASE NOTE:

Plant variety protection can only be afforded to the owners (not licensees) who meet the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.

2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.

3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed the final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definitions.

ST-470-E (04-03) designed by the Plant Variety Protection Office using Word 2000.

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
SCIENCE AND TECHNOLOGY
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MD 20705

EXHIBIT F
DECLARATION REGARDING DEPOSIT

NAME OF OWNER (S)	ADDRESS (Street and No. or RD No., City, State, and Zip Code and Country)	TEMPORARY OR EXPERIMENTAL DESIGNATION
Rutgers, The State University of New Jersey	Foran Hall Plant Biology & Pathology Dept. 59 Dudley Road New Brunswick NJ 08901	TL53 VARIETY NAME Fortitude
NAME OF OWNER REPRESENTATIVE (S)	ADDRESS (Street and No. or RD No., City, State, and Zip Code and Country)	FOR OFFICIAL USE ONLY
Dr. William Meyer	Foran Hall Plant Biology & Pathology Dept. 59 Dudley Road New Brunswick NJ 08901	PVPO NUMBER #200600117

I do hereby declare that during the life of the certificate a viable sample of propagating material of the subject variety will be deposited, and replenished as needed periodically, in a public repository in the United States in accordance with the regulations established by the Plant Variety Protection Office.

W Q Meyer — Signature

10-12-07 — Date